

REMARKS

We have addressed the Examiner's §112, second paragraph rejections in the amendments to the claims. We have also added claims 53-56.

Prior Art Rejections

Independent Claim 1

The Examiner rejected claims 1-3 and 7 as anticipated by Troester (U.S. 6,135,022). We note however that Troester neither describes nor suggests a marking device in which the housing, frame, marking device and motors operate together to move the marking device with respect to the housing, the housing forming an integral component of the operation, as recited in amended independent claim 1. Troester describes a marking device having a housing 50 that serves to encase the marking device itself. However, Troester's housing does not form an integral component of the operation of the marking device. Troester's marking device as shown, for example, in Figs. 1 and 2, functions without housing 50. Using the housing as an integral component of the operation has advantages. For example, because applicants' housing serves as an integral component in the operation of the marking device, a separate member, such as Troester's base frame 29, is not required.

Because claims 2, 3, and 7 depend from claim 1, we submit that these claims are patentable over the cited art for at least the same reason that independent claim 1 is patentable.

Independent Claim 14

The Examiner also rejected claims 14, 15, 23, and 24 as anticipated by Troester (U.S. 6,135,022). We note, however, that Troester does not describe or suggest a marking device including a carriage mounted on a frame for translational movement in the frame in a first direction parallel a first axis, a first motor to drive a marking head in the frame, a second motor arranged to pivot the frame with respect to the housing about the axis in a second, substantially orthogonal, direction, said first and second directions defining a plane wherein the frame, the carriage, the marking head, and first and second motors are disposed in the housing so that the device has a centre of gravity substantially coincident a plane over substantially all movements

of the frame in the second direction, as recited in amended claim 14. Among other advantages, by arranging the marking head to be operating in a plane coincident with the centre of gravity, moments caused by recoils from the marking head are minimized. This enables a user to more easily maintain the marking device in a fixed location. Troester is completely silent about the centre of gravity of his marking device and, to the extent that its centre of gravity can be deduced from the figures of his patent, it is well below the line of impacts of his marking head 14. We submit that for this reason alone, Troester does not anticipate or render obvious, the features of independent claim 14.

Because claims 15, 23, and 24 depend from claim 14, we submit that these claims are patentable over the cited art for at least the same reason that independent claim 14 is patentable.

Independent Claim 30

The Examiner also rejected claims 30-32, 41, and 49-51 as anticipated by Troester (U.S. 6,135,022). We note, however, that Troester does not describe or suggest a marking device including a first motor to drive a marking head in a frame, a second motor arranged to pivot the frame with respect to a housing, motors being disposed substantially within the confines of the frame, as recited in amended claim 30. Among other advantages, by arranging the marking head to be operating in a plane coincident with the centre of gravity, moments caused by recoils from the marking head are minimized. This enables a user to more easily maintain the marking device in a fixed location. Troester is completely silent about the centre of gravity of his marking device and, to the extent that its centre of gravity can be deduced from the figures of his patent, it is well below the line of impacts of his marking head 14. We submit that for this reason alone, Troester does not anticipate or render obvious, the features of independent claim 14.

Because claims 15, 23, and 24 depend from claim 14, we submit that these claims are patentable over the cited art for at least the same reason that independent claim 14 is patentable.

The Examiner also rejected claims 4-6, 8-11, 20-22, 25-27, 37, 40, 42-44, 46-48, and 52 as being unpatentable over Troester in view of one of either Robertson (U.S. 4,808,018), Curreno (U.S. 6,188,148) or Wadge (U.S. 6,263,980). Robertson was cited as disclosing a marking device having a forward plate that could serve as a detachable window. Curreno was cited as disclosing a marking device having carriage which is slidably moveable on a rail. Wadge was

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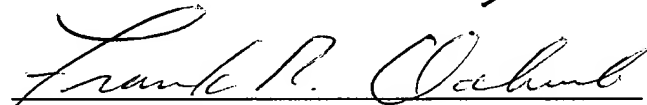
cited as disclosing a clamshell housing. We submit however, that neither Robertson, Curreno, nor Wadge disclose the features found to be lacking in the Troester patent as discussed above in conjunction with claims 1, 14, and 30. We submit, therefore, that these dependent claims are patentable for at least the same reasons that independent claims 1, 14, and 30 are patentable.

Attached is a marked-up version of the changes being made by the current amendment.

Applicant asks that all claims be allowed. Enclosed is a check for excess claim fees in the amount of \$120.00. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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Version with markings to show changes made

In the claims:

Please cancel claim 32 without prejudice.

Please amend the claims as follows:

1. A marking device ~~comprising:~~

~~comprising:~~

~~a housing of the device;~~

a housing encasing the device and having external walls defining an extremity of the marking device;

~~a frame~~a frame, pivotally mounted in the
housing between said external walls about a first axis;
axis;

~~——— a marking head mounted on the frame for translational movement in the frame by frame;~~

a first motor to drive the marking head in the frame in a first direction parallel said first axis and spaced therefrom; and

and

——— a second motor arranged to pivot the frame with respect to the housing about said first axis in a second, substantially orthogonal ~~direction~~ direction; wherein

said housing, frame, marking head and first and second motors operate together to move the marking head with respect to the housing, said housing forming an integral component of said operation.

2. A marking device as claimed 1, in which the housing further comprises a handle by means of which the device ~~may be manipulated.~~ is manipulatable.
3. A marking device as claimed 1, in which a window is provided in the housing through which the marking head protrudes, said window having a face to rest, in use, against an object to be marked to stabilise the device.
4. A marking device as claimed in claim 3, in which the window is selectively detachable from the housing for replacement with differently shaped windows for abutment against differently shaped objects to be marked.
8. A marking device as claimed in claim 7, in which said ~~pin is driven by a solenoid coil in~~ marking head has a head housing and a solenoid in the head housing to drive said pin, said head housing and solenoid defining a chamber in which is slidably ~~comprises~~ disposed a ferromagnetic piston ~~slideable in a chamber~~ to impact a base of said pin.
9. A marking device as claimed in claim 8, in which a return spring ~~returns~~ is disposed between the pin and the piston to return the pin and piston to a ready position.
11. A marking device as claimed in claim 7, in which the frame comprises a rail and a carriage slideable along said rail in said first direction, and in which said head housing is mounted substantially directly on said carriage so that the rail, carriage and ~~is about~~ head housing all lie in said third

direction, said head housing having substantially the same dimensions as said carriage, so that recoil impacts of said piston are transmitted directly into said carriage and thence to the rail and frame.

12. -A marking device as claimed in claim 1, in which said housing is a clamshell housing opening in said first direction, each clamshell having a bearing bush and said frame having a pivot pin captured in a bearing bush in each clamshell.
pivot pins captured in said bearing bushes.

14. A marking device comprising:

a housing of the device;

a frame arranged for pivotal movement with respect to the housing about a first axis;

~~_____ a marking head mounted _____ a carriage mounted on~~
the frame for translational movement in the frame ~~by a first motor~~ in a first direction parallel said first axis and spaced therefrom; _____

_____ a marking head mounted in the carriage

_____ a first motor to drive the marking head in the frame;
and

a second motor arranged to pivot the frame with respect to the housing about said axis in a second, substantially orthogonal, direction; wherein

said marking head includes a stylus pin ~~adapted to be driven~~ and drive means to drive the pin in a third direction substantially orthogonal said first and second directions against a surface to be marked, said first and second directions defining a plane; and

the frame, carriage, marking head, and first and second motors being disposed in the housing so that the device ~~having~~has a centre of gravity substantially coincident said ~~third direction~~plane over substantially all movements of the frame in said second direction.

15. A marking device as claimed in 14, in which the housing further comprises a handle by means of which the device ~~may be manipulated.~~is manipulatable.
16. A marking device as claimed in 14, in which the motors each comprise a body, ~~and a rotary armature threaded on a fixed screw.~~a rotary armature, and a screw, on which screw the armature is threaded, the screw being fixed.
17. A marking device as claimed in claim 16, in which the first motor is carried on the carriage, ~~the first screw of the first motor~~being fixed in the frame.
19. A marking device as claimed in claim 18, in which the ~~solenoid,~~marking head, carriage, rail and the rotational axis of said first motor, are all in line.
20. A marking device as claimed in claim 14, further comprising a sub-frame, which is pivotally mounted in the frame about a sub-axis parallel said first axis, the second motor being fixed in said sub-frame, ~~the fixed and a screw of the second motor being fixed in a clevis pivoted~~clevis, which is pivotally mounted in the housing about a clevis axis also parallel said first axis.

axis, the screw of the second motor being fixed in said clevis.

21. A marking device as claimed in claim 19, further comprising a sub-frame, which is pivotally mounted in the frame about a sub-axis parallel said first axis, the second motor being fixed in said sub-frame, ~~the fixed and a screw of the second motor being fixed in a clevis pivoted~~ clevis, which is pivotally mounted in the housing about a clevis axis also parallel said first axis, and in which said sub-axis is also inline with said ~~solenoid~~ marking head, carriage, rail and the rotational axis of said first motor.

22. A marking device as claimed in claim 20, in which said housing is a clamshell housing opening in said first direction, each clamshell having a bearing bush and said frame having pivot pins captured in said bearing bushes, and in which the housing further comprises a handle by means of which the device may be manipulated, and in which said clevis comprises pivot pins captured in a bearing bush in is manipulatable, and in which each clamshell has a handle bearing bush in the region of the clamshell ~~each clamshell in the region thereof~~ forming said handle of the device. ~~device,~~ said clevis comprising pivot pins captured in said handle bearing bushes.

24. A marking device as claimed 14, in which a window is provided in the housing through which the marking head ~~protrudes.~~ protrudes, said window having a face to rest, in use, against an object to be marked to stabilise the

~~A marking device as claimed in claim 14, in which said pin is driven by a solenoid coil in a head housing and comprises a ferromagnetic piston slideable in a chamber to impact a base of said pin device.~~

25. A marking device as claimed in claim 14, in which the ~~frame comprises a rail and a carriage slideable along said rail in said first direction.~~

marking head has a head housing and a solenoid in the head housing to drive said pin, said head housing and solenoid defining a chamber in which is slidably disposed a ferromagnetic piston to impact a base of said pin.

26. A marking device as claimed in claim ~~25~~, 14, in which the frame comprises a ~~rail and a rail~~, said carriage slideable being slidable along said rail in said first direction, ~~and in which said head housing is mounted substantially directly on said direction.~~

~~carriage and is about the same dimensions as said carriage so that recoil impacts of said piston are transmitted directly into said carriage and thence to the rail and frame.~~

27. A marking device as claimed in claim 25, in which the frame comprises a rail, said carriage being slidable along said rail in said first direction, and in which said head housing is mounted substantially directly on said carriage so that the rail, carriage and head housing all lie in said third direction, said head housing having substantially the same dimensions as said carriage, so that recoil impacts of said

piston are transmitted directly into said carriage and thence to the rail and frame.

28. A marking device as claimed in claim 23, in which said housing is a clamshell housing opening in said first direction, each clamshell having a bearing bush, and said frame having a pivot pin captured in a bearing bush in each clamshell.
pivot pins captured in said bearing bushes.

30. A marking device comprising:

a housing of the device;

a frame arranged for pivotal movement with respect to the housing about a first axis;

~~_____ a marking head mounted _____ a carriage mounted on the frame for translational movement in the frame by a first motor in a first direction parallel said first axis and spaced therefrom; _____~~

_____ a marking head mounted in the carriage

_____ a first motor to drive the marking head in the frame;

and

a second motor arranged to pivot the frame with respect to the housing about said axis in a second, substantially orthogonal, direction; wherein

said motors are disposed substantially within the confines of the frame.

31. A marking device as claimed in 30, in which the housing further comprises a handle by means of which the device ~~may be manipulated.~~ is manipulatable.

33. A marking device as claimed in 30, in which the motors each comprise a body, ~~and a rotary armature threaded on a fixed screw.~~ a rotary armature, and a screw, on which screw the armature is threaded, said screw being fixed.
34. A marking device as claimed in claim 33, in which the first motor is carried on the carriage, ~~the first~~ screw of the first motor being fixed in the frame.
35. A marking device as claimed in claim 33, in which the frame comprises a U-shaped element ~~along the base of which is fixed a rail and between the arms of which is fixed the screw.~~ having a base and arms, a rail being fixed along the base and the screw being fixed between the arms.
36. A marking device as claimed in claim 35, in which the ~~solenoid,~~ marking head, carriage, rail and the rotational axis of said first motor, are all in line.
37. A marking device as claimed in claim 30, further comprising a sub-frame, which is pivotally mounted in the frame about a sub-axis parallel said first axis, the second motor being fixed in said sub-frame, ~~the fixed~~ and a screw of the second motor being fixed in a clevis pivoted clevis, which is pivotally mounted in the housing about a clevis axis also parallel said first axis. axis, the screw of the second motor being fixed in said clevis.

38. A marking device as claimed in claim 35, further comprising a sub-frame, which is pivotally mounted in the frame about a sub-axis parallel said first axis, the second motor being fixed in said sub-frame, ~~the fixed and a screw of the second motor being fixed in a clevis pivoted~~ clevis, which is pivotally mounted in the housing about a clevis axis also parallel said first axis, and in which said sub-axis is also inline with said ~~solenoid carriage,~~ marking head, rail and the rotational axis of said first motor.
39. A marking device as claimed in claim 36, in which the housing further comprises a handle by means of which the device ~~may be manipulated, and in which said clevis comprises~~ is manipulatable, and in which each clamshell has a handle bearing bush in the region of the clamshell forming said handle of the device, said clevis comprising pivot pins captured in a said handle bearing bush in each clamshell in the region thereof forming said handle of the device. bushes.
40. A marking device as claimed 30, in which a window is provided in the housing through which the marking head ~~protrudes.~~ protrudes, said window having a face to rest, in use, against an object to be marked to stabilise the device.
42. A marking device as claimed in claim 41, in which said ~~pin is driven by a solenoid coil in~~ marking head has a head housing and a solenoid in the head housing to drive said pin, said head housing and solenoid defining a chamber in which is

slidably comprises disposed a ferromagnetic piston slideable in
a chamber to impact a base of said pin.

44. A marking device as claimed in claim ~~30, 42~~, in which the frame comprises a ~~rail and a rail~~, said carriage slideable being slidable along said rail in said first ~~direction.~~
direction, and in which said head housing is mounted substantially directly on said carriage and is about the same dimensions as said carriage so that recoil impacts of said piston are transmitted directly into said carriage and thence to the rail and frame.

45. A marking device as claimed in claim ~~42~~, ~~in which the frame comprises a rail and a carriage slideable along said rail~~30, in which said housing is a clamshell housing opening in said first direction, and in which said head housing is mounted substantially directly on said each clamshell having a bearing bush and said frame having pivot pins captured in said bearing carriage and is about the same dimensions as said carriage so that recoil impacts of said piston are transmitted directly into said carriage and thence to the rail and frame bushes.

46. A marking device as claimed in claim ~~30~~, ~~in which said housing is a clamshell housing opening in said first~~

~~direction, said frame having a pivot pin captured in a bearing bush in each clamshell.~~

1, in which said marking head has a marking point, which point is the tip of a marking pin of the marking head and at which the marking head contacts, in use, a surface to be

~~A marking device as claimed in claim 1, marked, in which said second motor has a point of application at which it effects said pivoting of the frame, and in which said first axis is between a marking point of said marking head and the point of application of said second motor to the frame.~~
disposed between, and spaced from, said marking point and said point of application.

48. A marking device as claimed in claim 46, further comprising a sub-frame, which is pivotally mounted in the frame about a sub-axis parallel said first axis, the second motor being fixed in said sub-frame, in which said point of application comprises said sub-axis.

52. A marking device as claimed in claim 51, in which ~~said lead terminates on a~~ distribution board is disposed in said pistol griphandle.

handle and said lead terminates on said distribution board.

Please add the following new claims:

53. A marking device comprising:

a housing of the device;

a frame arranged for pivotal movement with respect to

the housing about a first axis;

a carriage mounted on the frame for translational movement in the frame in a first direction parallel said first axis and spaced therefrom;

a marking head mounted in the carriage

a first motor to drive the marking head in the frame;
and

a second motor arranged to pivot the frame with respect to the housing about said axis in a second, substantially orthogonal, direction; wherein

said marking head includes a stylus pin and drive means to drive the pin in a third direction substantially orthogonal said first and second directions against a surface to be marked, said first and second directions defining a plane;

the motors each comprise a body, a rotary armature, and a screw, on which screw the armature is threaded;

the first motor is carried on the carriage, the screw of the first motor being fixed in the frame;

the frame comprises a U-shaped element along the base of which element is fixed a rail on which the carriage slides and between the arms of which element is fixed the screw;

the marking head, carriage, rail and the rotational axis of said first motor, are all in line.

54. A marking device as claimed in claim 53, further comprising a sub-frame, which is pivotally mounted in the frame about a sub-axis parallel said first axis, the second motor being fixed in said sub-frame, and a clevis, which is pivotally mounted in the housing about a clevis axis also parallel said

first axis, the screw of the second motor being fixed in said clevis.

55. A marking device as claimed in claim 53, further comprising a sub-frame, which is pivotally mounted in the frame about a sub-axis parallel said first axis, the second motor being fixed in said sub-frame, and a clevis, which is pivotally mounted in the housing about a clevis axis also parallel said first axis, and in which said sub-axis is also in line with said marking head, carriage, rail and the rotational axis of said first motor.

56. A marking device comprising:

a housing including internal walls having a structural support thereon;

a frame, pivotally mounted to the structural support about a first axis;

a marking head mounted on the frame;

a first motor to drive the marking head in the frame in a first direction parallel to said first axis and spaced therefrom; and

a second motor arranged to pivot the frame with respect to the housing about said first axis in a second, substantially orthogonal direction;

wherein said frame, first motor, and second motor being enclosed within the housing and operating together to move the marking head with respect to the housing.--